PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
02-1201-C		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US 03/36929	19/11/2003	22/11/2002
Applicant		
METHYLGENE, INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [X] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

   [ ] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [X] None of the figures.

INTERNATIONAL SEARCH REPORT

national Application No
/US 03/36929

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K31/381 A61K31/4436 A61K31/4709 A61K31/662 C07D333/18
C07D333/20 C07D333/58 C07D213/34 C07D213/38 C07F9/38
C07F9/40 C07F9/58 C07F9/60 C07F9/6536 C07F9/6553

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K C07D C07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
CHEM ABS Data, BIOSIS, EPO-Internal, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 472 406 B1 (BESTERMAN, JEFFREY M. ET AL) 29 October 2002 (2002-10-29) the whole document	7-32
X	WO 2001/002411 A (METHYLGENE INC., CAN.) 11 January 2001 (2001-01-11) the whole document	7-32
X	XIE, GUI-YANG ET AL: "Synthesis of a novel antigen containing phosphorus" CHEMICAL JOURNAL OF CHINESE UNIVERSITIES (GAODENG XUEXIAO HUAXUE XUEBAO) (2003), 24(6), 1037-1039, XP009029967 compound 4	1,3,4

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 May 2004	02/06/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Elliott, A

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Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MAVEYRAUD,. LAURENT ET AL: "Crystal Structure of an Acylation Transition-State Analog of the TEM-1.beta.-Lactamase. Mechanistic Implications for Class A.beta.-Lactamases" BIOCHEMISTRY (1998), 37(8), 2622-2628 , XP002280293 Scheme II ---	1-5,31, 32
A	LI, NAIXIN ET AL: "Structure-activity studies of the inhibition of serine.beta.-lactamases by phosphonate monoesters" BIOORGANIC & MEDICINAL CHEMISTRY (1997), 5(9), 1783-1788, XP002100230 Compound 14 ---	1-5,31, 32
A	CHEN, CELIA C. H. ET AL: "Structure of a phosphonate-inhibited.beta.-lactamase. An analog of the tetrahedral transition state/intermediate of.beta.-lactam hydrolysis" JOURNAL OF MOLECULAR BIOLOGY (1993), 234(1), 165-78, XP002280294 figure 2 ---	1-5,31, 32
A	RAHIL, JUBRAIL ET AL: "Characterization of covalently bound enzyme inhibitors as transition-stat analogs by protein stability measurements: Phosphonate monoester inhibitors of.beta.-lactamase" BIOCHEMISTRY (1994), 33(1), 116-25 , XP002963391 Compounds 15 & 17 ---	1-5,31, 32
A	RAHIL, JUBRAIL ET AL: "Structure-activity relationships in the inhibition of serine.beta.-lactamases by phosphonic acid derivatives" BIOCHEMICAL JOURNAL (1993), 296(2), 389-93, XP009029976 Compounds 11 & 13 ---	1-5,31, 32
A	RAHIL, JUBRAIL ET AL: "Mechanism of inhibition of the class C.beta.-lactamase of Enterobacter cloacae P99 by phosphonate monoesters" BIOCHEMISTRY (1992), 31(25), 5869-78, XP002280295 Compound 5 --- -/--	1-5,31, 32

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	RAHIL, J. ET AL: "Intramolecular participation of the amide group in acid- and base-catalyzed phosphonate monoester hydrolysis" JOURNAL OF THE CHEMICAL SOCIETY, PERKIN TRANSACTIONS 2: PHYSICAL ORGANIC CHEMISTRY (1972-1999) (1991), (7), 947-50, XP009029952 Compound 2g	1-5,31, 32

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claim 32 is directed to subject-matter comprising a method of treatment of the human and/or animal body, the search has been carried out and based on the alleged effects of the compounds of the application.

Continuation of Box I.1

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy (claim 32)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/36929

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: –
because they relate to subject matter not required to be searched by this Authority, namely:

see FURTHER INFORMATION sheet PCT/ISA/210

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 03/36929

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6472406 B1	29-10-2002	US 2004059115 A1	25-03-2004
		US 2004029836 A1	12-02-2004
		US 2004082546 A1	29-04-2004
		AU 770599 B2	26-02-2004
		AU 5785800 A	22-01-2001
		CA 2377762 A1	11-01-2001
		EP 1194436 A1	10-04-2002
		JP 2003503505 T	28-01-2003
		WO 0102411 A1	11-01-2001
WO 2001002411 A	11-01-2001	AU 770599 B2	26-02-2004
		AU 5785800 A	22-01-2001
		CA 2377762 A1	11-01-2001
		EP 1194436 A1	10-04-2002
		JP 2003503505 T	28-01-2003
		WO 0102411 A1	11-01-2001
		US 2004059115 A1	25-03-2004
		US 2004029836 A1	12-02-2004
		US 2004082546 A1	29-04-2004
		US 6472406 B1	29-10-2002